

Claims

1. A method for treating a metal comprising subjecting the metal to electrolysis in the presence of an electrolyte  
5 using alternating pulses of voltage and/or current, said alternating pulses being of opposite polarity, wherein if the electrolyte is an aqueous electrolyte it is an aqueous solution of a salt selected from the group consisting of alkali metal salts, alkali earth metal salts, aluminium salts and ammonium salts.

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2. A method according to claim 1, wherein the metal is austenitic stainless steel.

15 3. A method according to claim 1 or claim 2, wherein the electrolyte contains nitrogen.

4. A method according to claim 3, wherein the electrolyte is an aqueous solution of a nitrogen-containing salt.  
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5. A method according to claim 4, wherein the electrolyte is an aqueous nitrite solution.

25 6. A method according to claim 5, wherein the electrolyte is aqueous sodium nitrite.

7. A method according to claim 1, wherein the alternating pulses have waveform selected from the group consisting of sinusoidal waveforms and square waveforms.  
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8. A method according to claim 1, which further comprises, after electrolysis, heat treatment of the metal.

35 9. A method according to claim 1, wherein the metal to be treated is in the form of a metal article or a part of a metal article for use in an environment in which it will be exposed to tribological activity.

10. A method according to claim 1, wherein the metal to be treated is for use as a moving part in an apparatus.

11. A method according to claim 1, which is carried out *in situ* on apparatus selected from the group consisting of engineering equipment and storage tanks.

12. A metal or metal article which has been subjected to a method as defined in claim 1.

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13. Use of a method as defined in claim 1, to improve the resistance of austenitic stainless steel to mechanical degradation.

15 14. Use of a method as defined in claim 1, to remove or transform martensite from austenitic stainless steel.